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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,597	06/22/2006	Yeon Soo Kang	PI-131	5765

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EXAMINER	
SYKES, ALTREV C	
ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,597	KANG ET AL.	
	Examiner	Art Unit	
	ALTREV C. SYKES	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20061226*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazawa et al. (JP 2000-303259).

Regarding claims 1and 3 Miyazawa et al. discloses a process for producing a polyurethane elastic yarn excellent in moisture-absorbing properties and biodegradability without exerting adverse effect on the yarn basic properties of strength, elongation at break, and stress. A urethane prepolymer solution is mixed with the solutions of a chain extender and a chain terminator to effect the reaction between them and a solution of acetyl cellulose in a solvent is added to the reaction mixture at the same time as or after the reactions to prepare a spinning dope. Then the spinning dope is spun into fibers. (See Abstract) Miyazawa et al. discloses that a urethane prepolymer is produced by reacting an organic diisocyanate with a polymer diol. (See [0008]) Miyazawa et al. discloses the organic diisocyanate and diol are mixed first from 30 minutes to 2 hours. (See [0011]) Miyazawa et al. discloses a chain extension agent (diamine) and terminal stopper (monoamine) are next added to the urethane prepolymer and allowed to react for 30 minutes to 90 minutes. (See [0013]) Miyazawa et al. discloses simultaneously with the reaction of the urethane prepolymer, chain extension agent, and terminal stopper, the

acetyl cellulose (cellulose acetate) may be added in an amount of 3 to 15%. (See [0015] and [0040]) Therefore, it is noted by examiner that the process of Miyazawa et al. provides for the ripening of the solution since the chain extension agent, terminal stopper, and acetyl cellulose may be added simultaneously and allowed to react for 30 minutes to 90 minutes. (See [0013] and [0015])

Regarding claim 2, Miyazawa et al. discloses it is preferred that the acetyl cellulose be diacetyl cellulose thru/or triacetyl cellulose of 30 to 62.5% of an acetylation degree. (See [0016])

Regarding claim 4, Miyazawa et al. discloses polycarbonatediol as a preferred polyol. (See [0009]) Miyazawa et al. discloses the diisocyanate may be 4,4'-diphenylmethane diisocyanate or a tolylene diisocyanate. (See [0011]) It is noted by examiner that tolylene diisocyanate is a toluene derivative and would therefore provide for the same properties as the toluenediisocyanate as claimed by applicant. Miyazawa further discloses the chain extension agent may be ethylenediamine. (See [0014]) Miyazawa discloses using a terminal stopper such as dimethylamine. (See [0014]) Finally, Miyazawa discloses a solvent such as dimethylacetamide, dimethylformamide, and dimethylsulfoxide. (See [0017])

Regarding claim 5, Miyazawa et al. discloses an ultraviolet ray absorbent, gas antitarnish agent, and color may be added to the polyurethane. (See [0018]) Examiner equates an ultraviolet ray absorbent to the UV stabilizer and equates a gas antitarnish agent to a gas anti-yellowing agent as claimed by applicant.

Claim Rejections - 35 USC § 102/103

3. Claim 7 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Miyazawa et al. (JP 2000-303259).

Regarding claims 7, absent a showing to the contrary, it is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. It is also noted by examiner that velvet is defined by the Merriam-Webster Online Dictionary as a clothing and upholstery fabric characterized by a short soft dense warp pile. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art. In the instant case, Miyazawa et al. discloses a process for producing a polyurethane elastic yarn excellent in moisture-absorbing properties and biodegradability without exerting adverse effect on the

yarn basic properties of strength, elongation at break, and stress. A urethane prepolymer solution is mixed with the solutions of a chain extender and a chain terminator to effect the reaction between them and a solution of acetyl cellulose in a solvent is added to the reaction mixture at the same time as or after the reactions to prepare a spinning dope. Then the spinning dope is spun into fibers. (See Abstract) Miyazawa et al. discloses that a urethane prepolymer is produced by reacting an organic diisocyanate with a polymer diol. (See [0008]) Miyazawa et al. discloses the organic diisocyanate and diol are mixed first from 30 minutes to 2 hours. (See [0011]) Miyazawa et al. discloses a chain extension agent (diamine) and terminal stopper (monoamine) are next added to the urethane prepolymer and allowed to react for 30 minutes to 90 minutes. (See [0013]) Miyazawa et al. discloses simultaneously with the reaction of the urethane prepolymer, chain extension agent, and terminal stopper, the acetyl cellulose (cellulose acetate) may be added in an amount of 3 to 15%. (See [0015] and [0040]) Therefore, it is noted by examiner that the process of Miyazawa et al. provides for the ripening of the solution since the chain extension agent, terminal stopper, and acetyl cellulose may be added simultaneously and allowed to react for 30 minutes to 90 minutes. (See [0013] and [0015])

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazawa et al. (JP 2000-303259) in view of Brotherton et al. (US 3,256,220).

Miyazawa et al. discloses all of the claim limitations as set forth above, but the reference doesn't specifically disclose wherein after the addition of the cellulose acetate, the spinning solution is ripened by allowing it to stand at 30°C to 70°C for 28 to 38 hours.

Brotherton et al. discloses the preparation of elastic fibers from the reaction of various polyisocyanate compounds with active hydrogen compounds. (See Col 1, lines 19-28 and Col 18, lines 22-24) Brotherton et al. discloses the fibers are characterized by outstanding resistance to sunlight degradation, and high resistance to fume aging, i.e., resistance to breakdown caused by nitrous oxide which is commonly found as an impurity in the atmosphere. (See Col 18,, lines 29-36) Brotherton et al. discloses the fibers are prepared by first reacting a linear hydroxyl-terminated polymer with a diisocyanate to produce a prepolymer. (See Col 18, lines 37-42) Brotherton et al. discloses the prepolymer reaction time likewise is largely influenced by the correlation of the variable involved, and can vary from a few minutes to several hours. (See Col 20,

lines 22-25) Brotherton et al. discloses the chain extension reaction of said prepolymer with a bifunctional curing compound is well known for spinning techniques resulting in elastic fibers. (See Col 18, liens 42-46) Brotherton et al. discloses the linear hydroxyl-terminate polymers include alkylene and polyether glycols. (See Col 18, lines 67-70) Brotherton et al. discloses the bifunctional during compound may be a diamine such as ethylenediamine or hydrazine. (See Col 20, lines 41-48) A preferred diol to be added is ethanolamine. (See Col 20, lines 69-72) Brotherton et al. discloses the prepolymer is dissolved in a solvent such as dimethylsulfoxide. (See Col 21, lines 33-35) Brotherton et al. discloses the bifunctional curing compound is then added. The cure to prepare the fibers can be varied in duration to obtain the desire and optimum properties in the final fiber thereby producing fibers which may range from semi-elastic to highly elastic. (See Col 21, lines 66-72 and Col 22, lines 32-33) Examiner therefore equates the cure process to the ripening process of applicant. Brotherton et al. discloses the polyisocyanates can be used to modify cellulose and cellulose derivatives in textile materials. (See Col 28, lines 11-22 and 61-63) Brotherton et al. discloses after the addition of diacetate the reaction temperature was maintained at about 65°C by external cooling until the reaction subsided and then allowed to stand for one hour. (See Example 29) Therefore it is noted that allowing a solution to stand (i.e. ripen) after the addition of a cellulose acetate compound in the production of polyurethane compositions for elastic fibers is known in the art.

As Miyazawa et al. et al. and Brotherton et al. are both directed to methods for producing elastic fibers, the art is analogous. Therefore, it would have been obvious to

one of ordinary skill in the art at the time of the invention to utilize the reaction times and temperatures as taught by Brotherton et al. in the method as disclosed by Miyazawa et al. et al. for the added benefit of producing fibers which may range from semi-elastic to highly elastic. (See Col 22, lines 32-33) Therefore, the fibers would have been easily tailored to end product use.

Brotherton et al. fails to teach specifically teach the spinning solution is ripened by allowing it to stand for 28 to 38 hours. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the ripen time since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The burden is upon the Applicant to demonstrate that the claimed ripen time is critical and has unexpected results. In the present invention, one would have been motivated to optimize the ripen time motivated by the desire to producing fibers which may range from semi-elastic to highly elastic. (See Col 22, lines 32-33) Brotherton et al. the cure to prepare the fibers can be varied in duration to obtain the desire and optimum properties in the final fiber thereby producing fibers which may range from semi-elastic to highly elastic. (See Col 21, lines 66-72)

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mares et al. (US 5,531,998) in view of Miyazawa et al. (JP 2000-303259)

Mares et al. discloses polycarbonate-based block copolymers having at least one flexible block and at least one block which is more crystalline than said first flexible

block. The block copolymer so formed are particularly suited to be spun into fibers. Devices made from the block copolymers are especially useful with regard to their biodegradability or bioresorption properties. (See Col 1, lines 10-20) Mares et al. discloses the B-block or blocks are formed of one or more recurring units derived from monomers such as diols, cyclic ethers, polyols, ortho carbonates, and the like. (See Col 3, lines 31-36) In addition, for certain applications, end-capping of the block copolymers may be desired. End-capping may be accomplished by conventional means, as for example, acetylation. (See Col 11, lines 50-57) Mares et al. discloses other polymeric components such as fibers, fillers and binders may be combined with the copolymers prior to and during the formation of fibers or devices, or subsequent to their formation such as polyurethanes; segmented polyurethanes; polyetherurethanes; polyurethane ureas, cellulose such as, cellulose acetate. (See Col 13, lines 49-52 and 65-67 and Col 14, lines 4-6) Mares et al. discloses other components besides polymeric components may be combined with the polymers during or before they are formed into the fibers of the invention, or added to, coated onto and the like, after their formation. These components include substances that will enhance certain of the desired properties of fibers made from the polymers. Among the contemplated classes of such substances are antioxidants, and stabilizers of all kinds such as stabilizers for UV radiation. (See Col 14, lines 18-27) Mares et al. discloses the fibers of the present invention are useful in the formation of a variety of devices. For example, such fibers and/or yarns may be woven, braided and/or knitted into fabrics having various structural configurations as for example, tubes, which are knitted, woven or felted, such as velours. (see Col 14, lines 60-67) Mares et al.

discloses the modulus of the fibers may vary widely depending on the use. Fiber of different or the same polymeric compositions and physical and mechanical properties but differing in denier can be obtained and used or fabricated into fabric that is woven, knitted, velvet, velour, mesh or braided. Velveted material is particularly suited for use in small caliber blood vessel replacements. (See Col 16, lines 25-26 and 40-42) While Mares et al. discloses all of the claim limitations as set forth above, the reference is not explicit as to a particular preferred elastic fiber as claimed by applicant.

Miyazawa et al. discloses a polyurethane elastic yarn excellent in moisture-absorbing properties and biodegradability without exerting adverse effect on the yarn basic properties of strength, elongation at break, and stress. A urethane prepolymer solution is mixed with the solutions of a chain extender and a chain terminator to effect the reaction between them and a solution of acetyl cellulose in a solvent is added to the reaction mixture at the same time as or after the reactions to prepare a spinning dope. Then the spinning dope is spun into fibers. (See Abstract) Miyazawa et al. discloses that a urethane prepolymer is produced by reacting an organic diisocyanate with a polymer diol. (See [0008]) Miyazawa et al. discloses the organic diisocyanate and diol are mixed first from 30 minutes to 2 hours. (See [0011]) Miyazawa et al. discloses a chain extension agent (diamine) and terminal stopper (monoamine) are next added to the urethane prepolymer and allowed to react for 30 minutes to 90 minutes. (See [0013]) Miyazawa et al. discloses simultaneously with the reaction of the urethane prepolymer, chain extension agent, and terminal stopper, the acetyl cellulose (cellulose acetate) may be added in an amount of 3 to 15%. (See [0015] and [0040]) Therefore, it is noted by

examiner that the process of Miyazawa et al. provides for the ripening of the solution since the chain extension agent, terminal stopper, and acetyl cellulose may be added simultaneously and allowed to react for 30 minutes to 90 minutes. (See [0013] and [0015])

As Mares et al. and Miyazawa et al. are both directed to fibers having the property of biodegradability, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention motivated by expected success to utilize the specific elastic polyurethane fiber as taught by Miyazawa et al. to provide a velvet fabric as disclosed by Mares et al. since the reference discloses a substantially similar composition for producing fibers having biodegradability. One of ordinary skill in the art would have been easily motivated by the teaching of Miyazawa for a polyurethane elastic yarn excellent in moisture-absorbing properties and biodegradability without exerting adverse effect on the yarn basic properties of strength, elongation at break, and stress. (See Miyazawa Abstract)

Examiner further notes that claim 8 is noted to be a product-by-process claim. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is obvious over a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218

USPQ 289 (Fed. Cir. 1983). The applied prior art strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ibrahim (US 3,077,006) discloses the production of elastic filaments. (See Example 1)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 8AM-5PM EST, alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/
Supervisory Patent Examiner, Art Unit 1794

/ACS/
Examiner
2/26/09